AMENDMENTS TO THE SPECIFICATION:

Please replace the paragraph [0014] at page 5, with the following rewritten paragraph:

[0014] ~~FIG. 1 is a~~ flowchart FIGS. 1a and 1b are flowcharts illustrating a reliability-based characterization test using bisection;

Please replace the paragraph [0018] at page 5, with the following rewritten paragraph:

[0018] ~~FIG. 5 is a flowchart~~ FIGS. 5a and 5b are flowcharts illustrating a glitch check by signal height on multiple reference nodes;

Please replace the paragraph [0019] at page 5, with the following rewritten paragraph:

[0019] ~~FIG. 6 is a flowchart~~ FIGS. 6a and 6b are flowcharts illustrating a metastability check on multiple reference nodes;

Please replace the paragraph [0020] at page 5, with the following rewritten paragraph:

[0020] ~~FIG. 7 is a flowchart~~ FIGS. 7a and 7b are flowcharts illustrating a glitch check by signal height within limited range; and

Please replace the paragraph [0021] at page 5, with the following rewritten paragraph:

[0021] ~~FIG. 8 is a flowchart~~ FIGS. 8a and 8b are flowcharts illustrating a metastability check within a limited range.

Please replace the paragraph [0025] at page 6, with the following rewritten paragraph:

[0025] Referring now to the drawings wherein the showings are for purposes of illustrating preferred embodiments of the present invention only, and not for purposes of limiting the same, ~~Figure 1 is a flowchart~~ Figures 1a and 1b are

flowcharts illustrating a method of determining an optimized parameter for a circuit simulation. In step 3001, critical-path circuits of full circuits for the circuit simulations are determined for the bisection procedure. The range and precision of the bisection procedure and clock cycle timing need to be decided. In step 3002, the circuit is simulated based upon an initial optimization parameter (OP). For the reliability-based characterization illustrated in ~~Figure 1~~ Figures 1a and 1b, the OP is the setup time or hold time for the circuit. The initial minimum and maximum OP's are determined by user specified information. In step 3003, the primary criteria parameter (PCP) is calculated for the initial minimum OP. The PCP is the bisection error for the setup time or hold time. Once the PCP is calculated, then the circuit is simulated in step 3004 for the initial maximum optimization parameter (OP). In step 3005, the current PCP is then calculated for the initial maximum OP.

Please replace the paragraph [0027] at page 7, with the following rewritten paragraph:

[0027] Referring to Figure 2, the process for performing a glitch check by signal width from process C1 of Figure [[1]] 1b is shown. The process begins in step 3102 by determining the current left reference width (LeftRefWidth) and the current right reference width (RightRefWidth) for the signal pulse of the reference node during bisection iteration. Furthermore, the prime criterion parameter (PCP) is determined. For this test, the PCP is the bisection error. The LeftRefWidth, RightRefWidth and PCP is based on the current minimum and maximum values of the optimization parameter which for this test is either the setup time or hold time.

Please replace the paragraph [0031] at page 8, with the following rewritten paragraph:

[0031] Referring to Figure [[1]] 1b, another check that can be specified in step 3008 is the glitch check by signal height (C2). As seen in Figure 3, the process for determining whether there is a glitch by checking the height of the reference signal is shown. The process is similar to that shown in Figure 2, however, the height of the reference signal is used instead of the width. Accordingly, in step 3202 the current LeftRefDiff, RightRefDiff and PCP (i.e., bisection error) are determined for the

current minimum and maximum OP's. For this test, the OP is the setup time or hold time. The LeftRefDiff, RightRefDiff and MiddleRefDiff are the height of the signal pulse during bisection iteration. In step 3203, the current OP value is calculated as the average of the minimum OP value and the maximum OP value. In step 3204, it is determined whether the PCP converges to a bisection precision range which is specified by the user. If the PCP has converged, then the process proceeds to step 3205 where the measurement results are parsed to generate bisection convergence data output and the process ends.

Please replace the paragraph [0034] at page 9, with the following rewritten paragraph:

[0034] In addition to the foregoing, it is also possible for a metastability check to be performed for characterization. The metastability check assures that there is no metastability or that the metastability is under the specified tolerance. For example, in step 3008 of Figure [[1]] 1b, a metastability check (C3) may be chosen. Referring to Figure 4, the metastability check is performed by determining the current slew time of signal transition during bisection iteration. Specifically, in step 3302, the current LeftSwitchDiff and RightSwitchDiff are determined based on current minimum OP and maximum OP values. The LeftSwitchDiff and RightSwitchDiff are the slew time of the signal transition. The OP is the optimization parameter of setup time or hold time. Furthermore, the current PCP (i.e., bisection error) is determined in step 3302 for the current maximum and minimum OP values.

Please replace the paragraph [0037] at page 10, with the following rewritten paragraph:

[0037] It is also possible to use the setup and/or hold time characterization to assure that there is either no glitch or a glitch is under a specified tolerance on multiple reference nodes. Specifically, in step 3008 of Figure [[1]] 1b, a glitch check by signal height on multiple references (C4) can be chosen to be performed. Referring to ~~Figure 5~~ Figures 5a and 5b, the current OP is determined by averaging the current minimum and maximum OP's in step 3401. The optimization parameter (OP) is the setup time or the hold time. Next, in step 3410, the PCP (i.e., bisection

error) is checked to see if it converges into a user defined bisection error range. If the PCP does converge, then the current OP is saved for setup and hold time calculations in step 3415. However, if the PCP does not converge in step 3410, then the circuit is simulated in step 3402 based on the current optimization parameter determined in step 3401. Furthermore, the current PCP is calculated in step 3402.

Please replace the paragraph [0040] at page 11, with the following rewritten paragraph:

[0040] Similarly, the user has the option to perform metastability checks on multiple reference nodes in step 3008 of Figure [[1]] 1b. Referring to ~~Figure 6~~ Figures 6a and 6b, the metastability check on multiple reference nodes is similar to the glitch check for multiple reference nodes described for ~~Figure 5~~ Figures 5a and 5b with the only difference being the secondary criterion parameter is the meta-stable time that is the time that the signal stays in a narrow voltage range (e.g., 0.3*VDD to 0.7*VDD) during the transition.

Please replace the paragraph [0041] at page 12, with the following rewritten paragraph:

[0041] For example, referring to ~~Figure 6~~ Figures 6a and 6b, in step 3501 the current OP value is determined to be the average of the current minimum and maximum OP values. The OP value is the setup time or the hold time. In step 3510, it is determined whether the PCP (e.g., bisection error) converges into the user-defined bisection error range. If the PCP does converge into the range, then the current OP is saved as the setup or hold time and the process ends. However, if the PCP does not converge, then the circuit is simulated in step 3502 based on the current OP and the current PCP is calculated.

Please replace the paragraph [0043] at page 12, with the following rewritten paragraph:

[0043] Similarly, it is possible to perform a glitch check by signal height with limited range from step 3008 of Figure [[1]] 1b. Referring to ~~Figure 7~~ Figures 7a and 7b, the setup and hold time characterization with glitch check by signal height will assure

that within a limited range centered by the clock signal transition that there are no glitches or that the glitch is under a specified tolerance. In step 3601, the current optimization parameter (OP) is determined by averaging the current minimum OP and the current maximum OP. The OP is the setup time or hold time. In step 3611, it is determined whether the PCP (primary criterion parameter) that is the bisection error converges into a defined bisection error range. If the PCP does converge, then in step 3612 the current OP is saved for the setup and hold time calculation.

Please replace the paragraph [0046] at page 13, with the following rewritten paragraph:

[0046] It is also possible to perform a characterization with a meta-stability check with limited range from step 3008 of Figure [[1]] 1b. Referring to ~~Figure 8~~ Figures 8a and 8b, the check will assure that there is no metastability or metastability under a specified tolerance for a limited range centered by the clock signal transition. In step 3701 of Figure [[8]] 8a, the current OP (e.g., setup time or hold time) is determined by averaging the current minimum OP and the current maximum OP. Next, in step 3710 the PCP (e.g., bisection error) is checked for convergence into a specified bisection error range. If the PCP converges, then the current OP is saved for the setup and hold time calculations in step 3711. If the PCP does not converge, then the circuit is simulated based on the current OP in step 3702. The current PCP will also be calculated in step 3702.

Please replace the paragraph [0049] at page 14, with the following rewritten paragraph:

[0049] Referring back to Figure [[1]] 1b, if the user decides not to perform other reliability checks in step 3008, then the process proceeds to step 3009 where the current OP is calculated. Specifically, the current OP is calculated by averaging the current minimum OP and the current maximum OP. After the current OP has been calculated, then the PCP is checked for convergence in step 3010. Specifically, the convergence is determined by whether the bisection error (i.e., PCP) has converged into a bisection precision range which is specified by the user. If the bisection error has converged, then the current OP is saved as the setup and hold time for any

subsequent calculations. However, if there is not convergence of the bisection error, then the circuit is simulated again in step 3011 using the current OP calculated in step 3009.